The Ultimate Fibonacci Guide

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Who is Fibonacci?

Leonardo Bonacci – also known as Leonardo Fibonacci – was an Italian mathematician in the 12th century. He was considered the most talented Western mathematician of his time and one of the greatest of all time. Although Fibonacci himself did not come up with what is now known as the Fibonacci sequence, he certainly introduced the phenomenon to the West in his book Liber Abaci.



(Source: http://images.fineartamerica.com/images-medium-large/leonardo-fibonacci-granger.jpg)

What is the Fibonacci sequence?

F_0	F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8	F_9	F_{10}	F_{11}	F_{12}	F_{13}	F_{14}	F_{15}	F_{16}	F_{17}	F_{18}	$\ldots F_n$
0	**1**	**1**	**2**	**3**	**5**	**8**	**13**	**21**	**34**	**55**	**89**	**144**	**233**	**377**	**610**	**987**	**1597**	**2584**	

(0+1 = 1)

(1+1 = 2)

(1+2 = 3)

(2+3=5)

As can be seen, each number in the sequence is the sum of the prior two numbers.

Thus, the Fibonacci sequence can be summarized using this formula:

$$F_n = (F_{n-1}) + (F_{n-2})$$

How are the Fibonacci retracement and extension levels derived from the above sequence?

- **61.8%** = divide current number with next (from 13 onwards) e.g. 55/89 = 0.618 (approx.)
- **161.8%** = divide next number with current e.g. 89/55 = 1.618. This is also called the "golden ratio"
- **38.2%** = 0.618^2 (or skip 1 sequence in division e.g. 55/144 = 0.382)
- **23.6%** = skip 3 sequences in division e.g. 34/144 = 0.236 (approx.)
- **78.6%** = $\sqrt{0.618}$
- **127.2%** = $\sqrt{1.618}$
- **261.8%** = 1.618^2 or $\frac{1.618}{0.618}$
- **0%, 50%, 100% & 200% are not Fibonacci numbers**, but are nonetheless used by some traders

Most important Fibonacci levels

- 161.8%
- 61.8%
- 38.2%

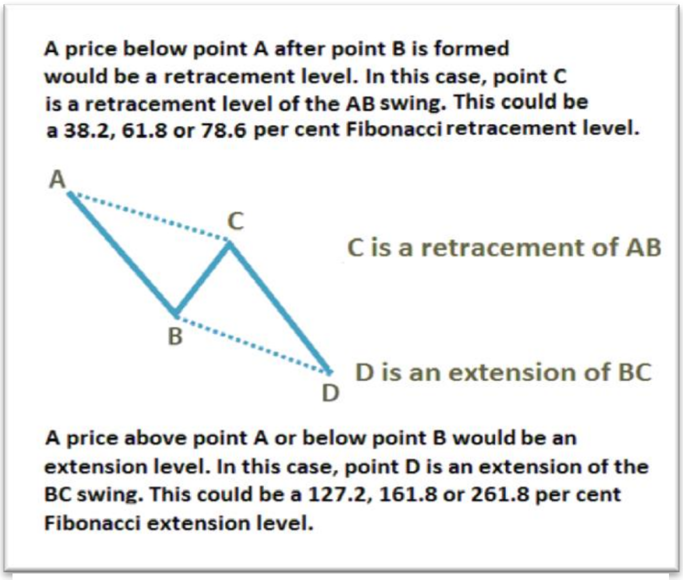
Why is Fibonacci analysis so popular in trading?

- Fibonacci levels are geometric numbers, so the retracements & extensions appear pleasing to the eye
- Fibonacci levels provide objective price reference points and thus remove subjectivity (when used correctly)
- Fibonacci retracements and extensions are among the "invisible" levels of support and resistance

Difference between Fibonacci retracements and extensions

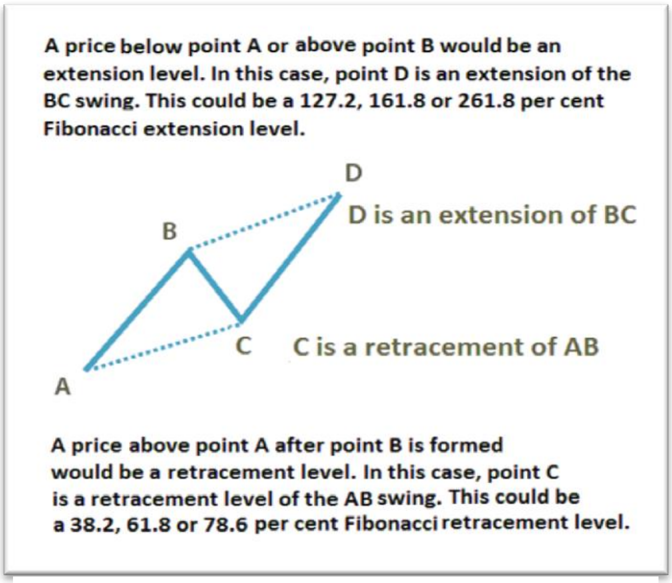
Fibonacci retracement levels are those that are lower than the 100% of a price swing, while extensions are those that are above 100%. Fibonacci levels are used as support or resistance, and/or for projection of profit targets.

Figure 1: Fibonacci levels in a downward trending market



Source: FOREX.com

Figure 2: Fibonacci levels in an upward trending market



Source: FOREX.com

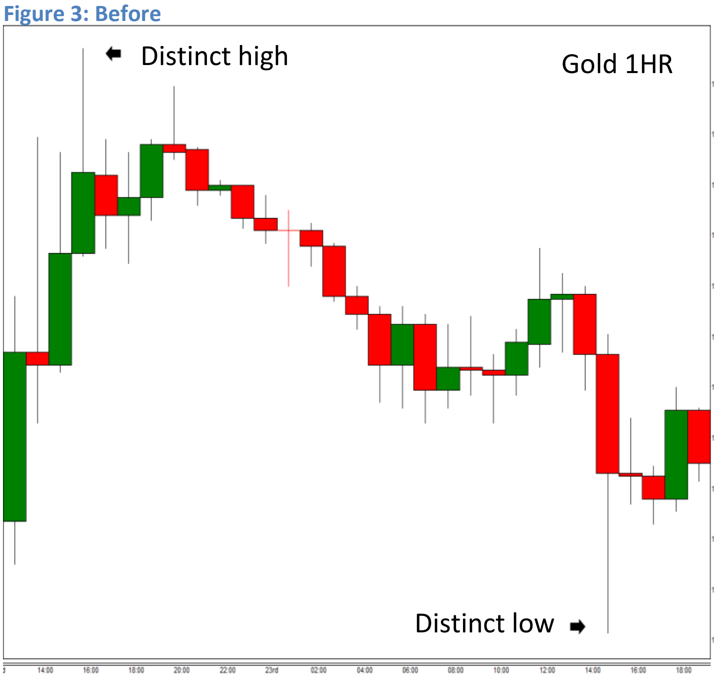
How to plot Fibonacci levels on the chart

Almost all trading platforms will have Fibonacci as part of their technical tools, so one does not have to worry about calculating the retracement and extension levels manually. All the trader has to do is identify a distinct high and a distinct low and plot the Fibonacci levels by dragging it from one extreme to the next. It is important to select the candlesticks' wicks, so as to obtain more accurate results. They are always drawn from the left to the right:

- for an upward trending market, it is drawn from the low to the high, and
- for a downward trending market, it is drawn from the high to the low

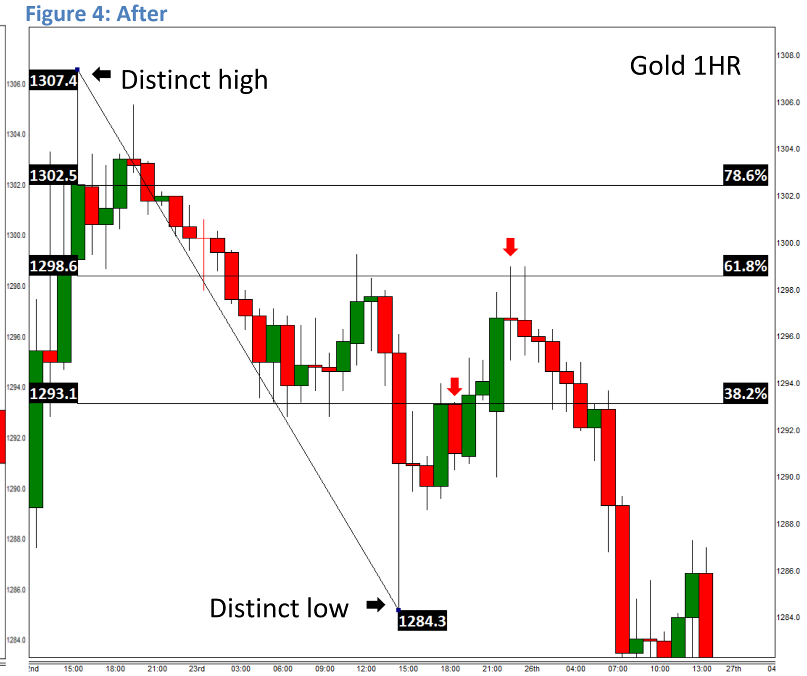
Once plotted, the trading platform would automatically display the Fibonacci retracements and extensions, and also their corresponding price levels. The Fibonacci tool is highly customisable, so one could add or remove certain levels.

Figure 3: Before



Source: FOREX.com

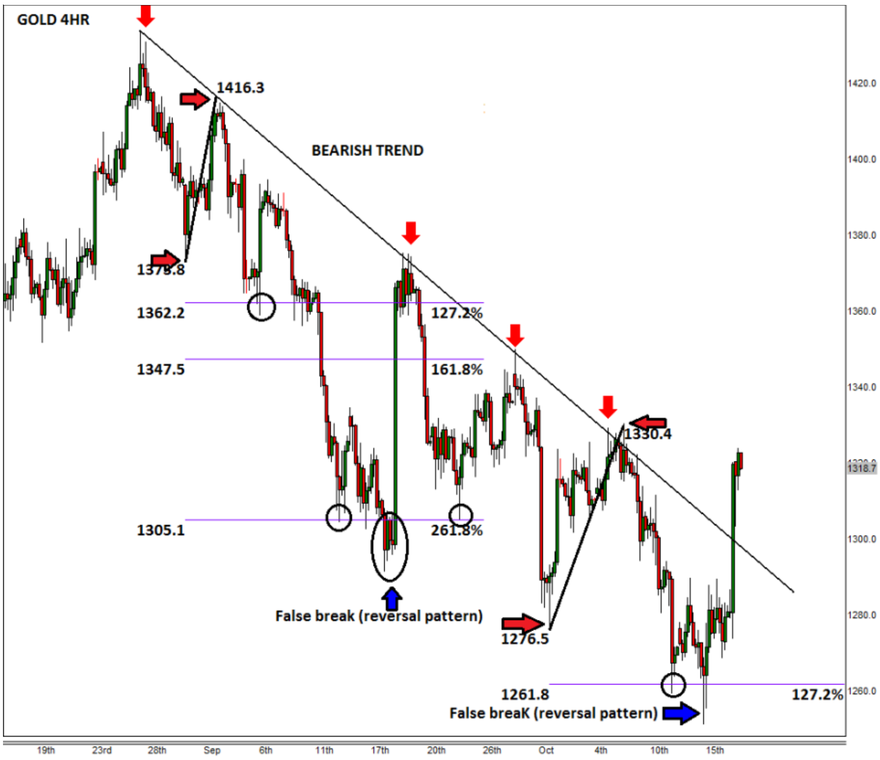
Figure 4: After



Source: FOREX.com

As can be seen from the example above, gold was trading lower on the 1-hour time frame. There was a distinct high and a low clearly visible. So, to draw the Fibonacci levels, one would have to drag it from the high to the low. The retracements and their corresponding price levels are then displayed automatically (see figure 4). In this particular example, gold momentarily found resistance around the 38.2% Fibonacci level before pushing higher to the more-important 61.8% retracement. There, the sellers stepped in and drove prices lower, eventually beyond the prior low.

Figure 5:



Source: FOREX.com

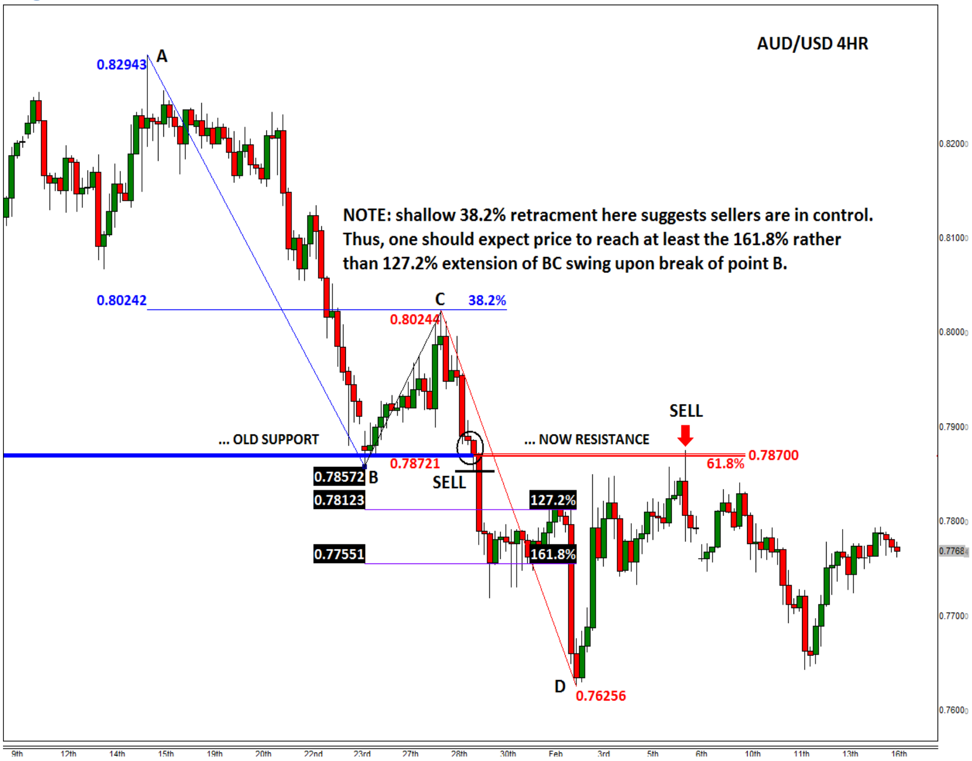
In the example in figure 5, there are two separate sets of Fibonacci extension levels. We have deleted the retracement levels in order to keep the charts looking uncluttered. In this example, the 127.2% extension level has provided decent support on both occasions. As this is in a downward trending market, traders should ideally use the extension levels as their profit targets, rather than for entry. However, sometimes the markets form significant bottoms or highs around these Fibonacci extensions because they are effectively exhaustion points. So, there's increased likelihood for price to turn at those extreme levels. The clue would usually come in the form of a false breakout reversal pattern, which basically represents the lack of further supply in a downward- or demand in an upward-trending market. On the chart, we have circled two instances of false breakout patterns, the first being around the 261.8% and the second at the 127.2% extension level. Often, from false breaks come fast moves in the opposite direction! To take advantage of these patterns, it is extremely important to be aware of the significant highs and lows, and also the Fibonacci exhaustion levels on various time frames.

Combining Fibonacci with other technical tools

Trading is a *game of probabilities*. As traders and analysts, our aim should be to find opportunities which have higher probabilities of success. While using Fibonacci levels are, in our view, extremely important, on their own they are not always reliable – just like any other form of technical analysis. In the example above, we briefly introduced combing Fibonacci with other technical tools, which is one way we can increase the chances of success. Our favourite way of doing this is to keep things as simple as possible. So, look for convergence of a Fibonacci level (especially the 61.8 or 78.6 per cent retracements, or the 161.8 or 261.8 per cent extensions) with previous support/resistance, trend lines, major highs/lows and the 50 or 200 day moving averages. The more technical tools converge at or around one point, the more likely it is that price will turn there. For a Head and Shoulders, which is a major reversal pattern, the right shoulder sometimes converges with a 61.8 or 78.6 per cent Fibonacci retracement level, thus providing an ideal entry point. Momentum traders may also want to confirm the Fibonacci support or resistance by looking for a crossover on the MACD or the RSI. In the examples below we have provided a number of scenarios which should hopefully help you to spot similar opportunities in your own trading.

In figure 6, below, there are at least two clear trading opportunities that can be identified using a combination of Fibonacci and support/resistance. The rally from point B came to a halt at point C, at the 38.2% retracement of the AB swing. Once the old support around 0.7870 is broken, this clearly points to a continuation to the downside after that *shallow pullback to the 38.2% Fibonacci level*. The trader could use this information to expect a sizeable

Figure 6:



Source: FOREX.com

continuation; hence, (s)he may wish to have a profit target around the 161.8% extension (0.7755) of the BC swing as opposed to merely the 127.2% extension (0.7812). If this trade was missed, there was another great opportunity to sell once price re-tested that old support level of 0.7870. Even without a Fibonacci convergence this would have been a trade on its own. But the fact that there is a 61.8% retracement there too (i.e. of the CD swing), this therefore increased the probability of price turning at that broken support level. The stop loss could have been a very tight 15 or so pips above 0.7870, providing a highly favourable risk to reward profile.

In figure 7, the EUR/USD was consolidating inside a triangle pattern ahead of the key European Central Bank meeting on 22nd January 2015. Once the ECB announced that it was introducing QE, the euro fell dramatically. A trading opportunity would have been to enter with a stop sell order somewhere below the trend line. The stop loss could have been above point A. As can be seen, the EUR/USD broke through the prior low (point X) with ease and didn't even pause at the 127.2% extension level. It did so at 161.8%, however. But such was the strength of the move that the pause there barely lasted half a day. The failure below the Fibonacci level would have been another sell opportunity with a target at or near the 261.8% extension. When price eventually reached the 261.8% extension level, there was a clear false breakout scenario. The bears simply had enough at that point and there were no further significant sell orders below this level, leading to a sharp short-squeeze rally. This could well have been an opportunistic buy trade with a very tight stop loss just below the low. Again, the risk-to-reward profile of such a trade would have been highly favourable.

Figure 7:

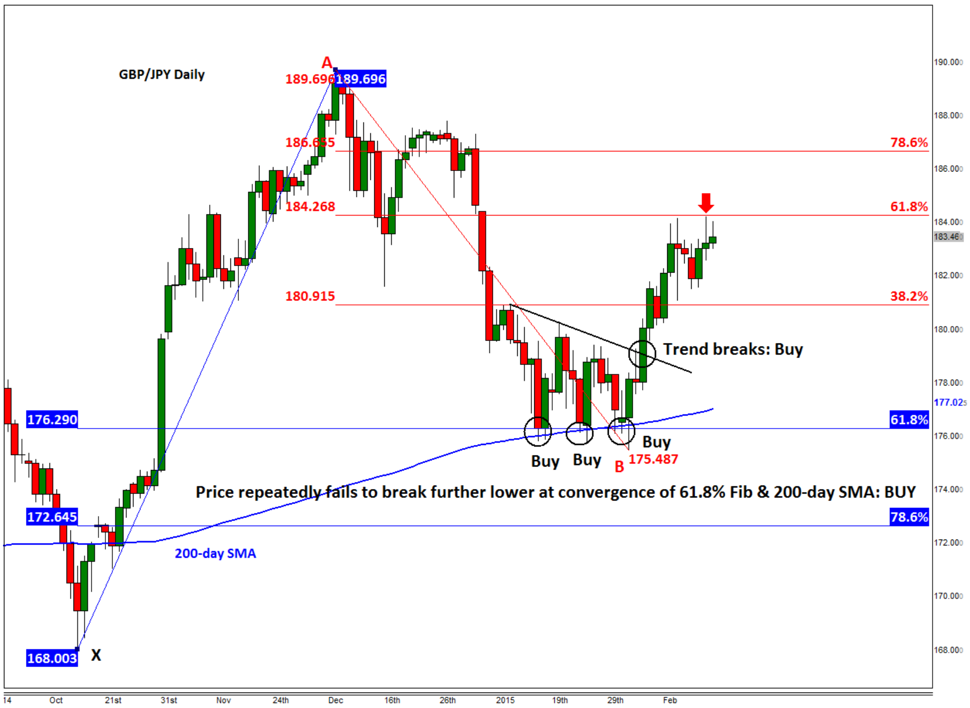


Source: FOREX.com

Although a lot of traders use the exact Fibonacci levels for entering and exiting trades, it is sometimes okay to wait for confirmation. This is highlighted in the example in Figure 8. As can be seen, the convergence of the 61.8%

Fibonacci retracement level with the 200-day moving average provided strong support for the GBP/JPY on several occasions. Though each separate occasion could have turned out to be decent trading opportunities, there was a danger for price to have broken further lower. But as it turned out, the buyers successfully defended that area of support and this was confirmed by the break above the short-term trend. Thus the long trade could have been put on upon the break of this trend line. The rally eventually ran out of steam around the 61.8% Fibonacci retracement of the AB downswing. Thus this particular retracement level could have been used as a profit target. One of the least appreciated advantages of using Fibonacci this way is that it will remove a great deal of subjectivity from trading.

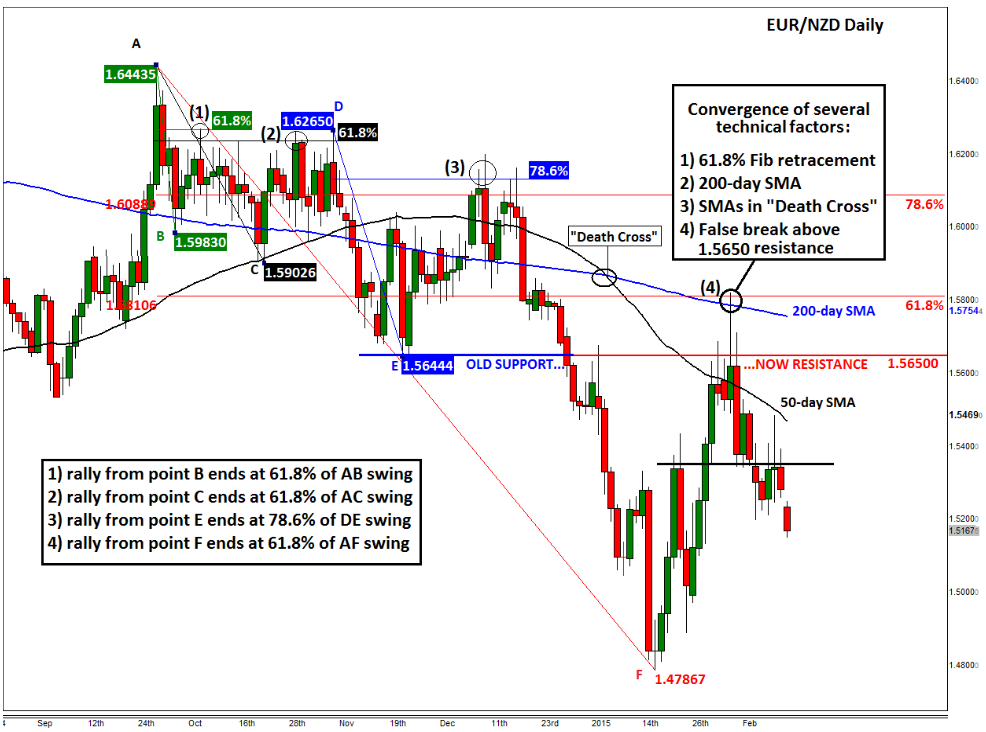
Figure 8:



Source: FOREX.com

Our last example in Figure 8 is the daily chart of the EUR/NZD. There at least four separate occasions where a 61.8 or 78.6 per cent Fibonacci retracement level has provided strong resistance. The most obvious of these is the 4th occasion when price had staged a sharp rally from point F towards its 200-day moving average. The fact that the 61.8% Fibonacci retracement level of the downswing from point A to F had converged with the 200-day SMA there meant that price was highly likely to turn there. On top of this, there was already a "death crossover" (which occurs when the 50-day SMA crosses below the 200-day SMA) meaning that trend was indeed very bearish. As it turned out, it was unable to hold above the support-turned-resistance at 1.5650 on a closing basis. So, if the trade at the 61.8% level was missed, one could have still sold it near the 1.5650 handle with a stop above the 61.8% level.

Figure 9:



Source: FOREX.com

In summary, the probability of price turning at a Fibonacci level greatly increases when they converge with other technical tools. But even on their own, Fibonacci levels often provide strong support and resistance. Such setups occur time and again and on various time frames. Generally, the higher the time frame the more significant the Fibonacci support or resistance is likely to be. Try applying Fibonacci levels in the direction of the underlying trend.